THE CLAIMS

What is claimed is:

1. A method of forming at least a portion of a golf ball core which comprises:

mixing a resilient polymer component, a free-radical initiator, a crosslinking agent, and a reinforcing polymer component to provide an uncrosslinked first mixture having a rigidity as determined by a flexural modulus greater than about 3.5 MPa;

forming the first mixture into a plurality of shells in a desired shape, wherein the reinforcing polymer component imparts sufficient rigidity to the shells to maintain the desired shape until the first mixture is crosslinked;

providing a center;

assembling at least two shells concentrically about the center to form a first mantle layer, wherein the first mantle layer and center together form a ball core; and

applying sufficient heat and pressure to the core for a time sufficient to at least partially crosslink the first mixture in the shells, thereby curing at least a portion of the golf ball core.

2. The method of claim 1, wherein the first mixture is formed into an ellipsoidal shape.

3. The method of claim 1, which further comprises selecting the resilient polymer component to have a molecular weight average of between about 50,000 to 1,000,000.

4. The method of claim 1, which further comprises selecting the reinforcing polymer component to have a crystalline melting temperature between 35°C to 120°C.

5. The method of claim 1, wherein the first mixture is formed into a plurality of shells by injection molding.

6. The method of claim 1, wherein the desired shape is provided by compression molding the first mixture.

7. The method of claim 1, wherein golf ball core has a midpoint and the center of the core is disposed within about 0.5 mm from the midpoint.

8. The method of claim 1, which further comprises adjusting the flexural modulus of the uncrosslinked first mixture to at least about 7 MPa.

9. The method of claim 1, which further comprises adjusting a loss tangent of the uncrosslinked first mixture to less than about 0.15 at -60°C and less than about 0.05 at 30°C, and adjusting the tensile storage modulus to greater than about 100 MPa at -60°C and greater than about 50 MPa at 30°C, each when measured at 1 Hz and one percent strain.

10. The method of claim 1, wherein the melting temperature and the crosslinking temperature are selected to differ by about 60°C to 160°C.

11. The method of claim 1, wherein the core is selected to comprise a center including surrounding elastic windings, a solid center, or a liquid center.

12. The method of claim 1, which further comprises forming at least one additional layer about the center prior to assembling the shells concentrically about the center, after assembling the shells concentrically about the center, or after heating the core.

13. The method of claim 12, wherein the additional layer is formed around the core after heating the core to provide a cover disposed concentrically about the golf ball core.

14. An elastomeric composition comprising a blend of:

a resilient polymer component of at least one polybutadiene having a high molecular weight average and a 1,4-*cis* content of greater than about 50 weight percent;

a free-radical initiator; and

an amount of reinforcing polymer component having a sufficiently low viscosity at a mixing temperature to facilitate mixing of the reinforcing polymer component with the resilient polymer component and having a crystalline melting point sufficiently low to facilitate the mixing while avoiding substantial crosslinking, wherein the uncrosslinked composition has a flexural modulus of greater than about 3.5 MPa.

15. The composition of claim 14, further comprising a crosslinking agent in an amount sufficient to increase crosslinking between the polymer components.

16. An ellipsoidal article comprising the composition of claim 14.

17. The composition of claim 14, wherein the resilient polymer component has a molecular weight from about 50,000 to 1,000,000.

18. The composition of claim 17, wherein the molecular weight average of the resilient polymer component is from about 250,000 to 750,000.

19. The composition of claim 14, wherein the free-radical initiator is an organic peroxide.

20. The composition of claim 14, wherein the reinforcing polymer component comprises a block copolymer ether/ester, an acrylic polyol, a transpolyisoprene, a transpolybutadiene, a 1,2-polybutadiene, an ethylene-vinyl acetate copolymer, a polyethylene or copolymer thereof, or a cyclooctene.

21. The composition of claim 14, further comprising a crosslinking agent which includes a metallic salt selected from the group consisting of an unsaturated fatty acid, a monocarboxylic acid, and mixtures thereof.

22. The composition of claim 14, wherein the reinforcing polymer component is present in an amount of about 1 to 40 weight percent of the resilient and reinforcing polymer components.

23. A multi-layer golf ball comprising:

a core comprising:

a center;

a mantle comprising at least one layer, the layer comprising a blend of a reinforcing polymer component and an uncrosslinked resilient polymer component, wherein the mantle is disposed concentrically adjacent the center; and

at least one cover layer disposed concentrically adjacent the mantle and outwardly thereof, wherein the uncrosslinked mantle layer is sufficiently rigid to inhibit the resilient polymer component from substantially altering shape prior to crosslinking.

24. The ball of claim 23, wherein the resilient polymer component of the core comprises polybutadiene, natural rubber, polyisoprene, styrene-butadiene, or styrene-propylene-diene rubber.

25. The ball of claim 24, wherein the resilient polymer component is 1,4-*cis*-polybutadiene having a 1,4-*cis* content of greater than about 50 weight percent.

26. The ball of claim 25, wherein the resilient polymer component comprises a high molecular weight average 1,4-*cis*-polybutadiene.

27. The ball of claim 26, wherein the resilient polymer component comprises 1,4-*cis*-polybutadiene having a molecular weight average of about 50,000 to 1,000,000.

28. The ball of claim 23, wherein the amount of resilient polymer component is between about 60 to 99 weight percent of the total weight of polymer components.

29. The ball of claim 23, further comprising at least one of a filler, a free-radical initiator, or a crosslinking agent.

30. The ball of claim 29, wherein the filler comprises masterbatch red, zinc oxide, tin oxide, barium sulfate, zinc sulfate, calcium carbonate, barium carbonate, clay, tungsten, tungsten carbide, a silica, ground rubber, or trimethyl-tripropane present in an amount from about 0.5 to 50 weight percent of the mantle.

31. The ball of claim 29, wherein the free-radical initiator is an organic peroxide.

32. The ball of claim 29, wherein the crosslinking agent comprises a metallic salt selected from the group consisting of an unsaturated fatty acid, a monocarboxylic acid, and mixtures thereof.

33. The ball of claim 23, wherein the uncrosslinked mantle layer has a flexural modulus of greater than about 3.5 MPa.